



IQ Wave

Comfort without compromise

THORN

Comfort without compromise

People are an organisation's most important and valuable asset.

Regardless of what business you're in, people are an organisation's most important and valuable asset. Employees are often the keepers of critical information and can help drive unique competitive advantages. Significantly, people are also a major operating cost. When you consider a building's overall running costs, the cost of people is typically 90%. Any improvement in employee productivity, attendance and retention can therefore make a real difference to the bottom line.

Improve employee productivity and wellbeing with comfort management

There are many reasons for investing in new lighting technology. Lower costs and reduced carbon footprint are key benefits but perhaps most importantly, the right lighting helps improve employee productivity and wellbeing by contributing towards a healthy, well-designed work environment.

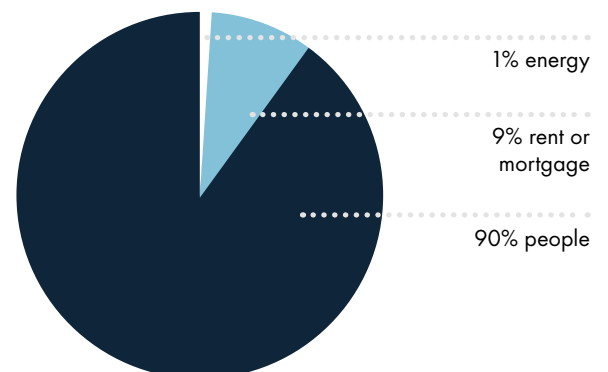
Linking lighting to performance

There are long established links between lighting and employee performance. The provision of suitable lighting for example is important for helping to improve productivity, comfort and satisfaction. Lighting which is too dim, too bright, poorly distributed or flickering can reduce employee performance by causing health problems including eyestrain, headaches, dry eyes and blurred vision.

Lighting which is at the right level and free from glare or other sources of discomfort can help increase attendance and retention by managing comfort and reducing stress.



Typical EU building running costs*

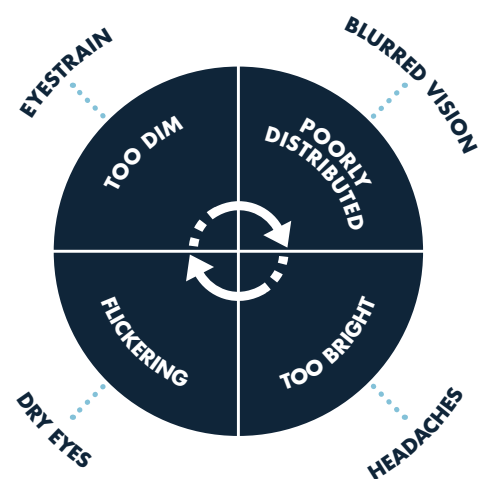


*Using 2009 values, the cost per square foot of a given corporate office space is overwhelmingly devoted to salary; 90.3% of costs per square foot are funneled towards salary, while only 8.9% is paid toward rent and mortgage, and 0.8% represents energy costs (BOMA, 2010, US Department of Labor, 2010)
Cited in Browning B. (2012) The Economics of Biophilia: Why designing with nature in mind makes sense



Glare control for the modern office

Today's modern office is filled with glossy devices, connected via video conferencing and operational for increasingly long hours. Taking into consideration these characteristics along with the often copious amounts of natural daylight, IQ Wave offers advanced glare and lighting control for employee comfort and productivity.



Lighting for the task, space and face

Great office lighting considers the task, spatial environment and facial communication.



Task

Office tasks typically involve looking at screens, keyboards, books, paper, boards and phones. These practical, repetitive activities are performed day in, day out.

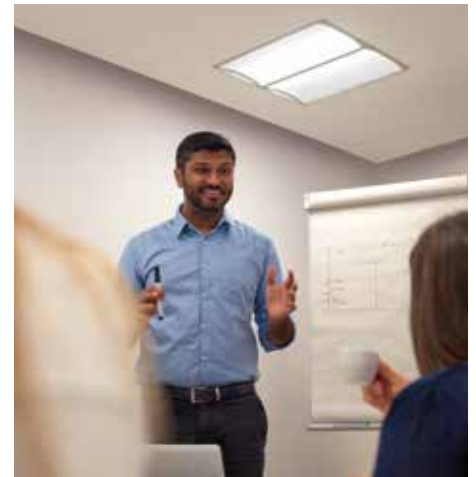
EN12464 specifies 500 lux for desk based tasks, 300 lux for filing and administration.



Space

The office space gives people somewhere distant to focus and relax. Room surfaces, colours and artwork often help shape the space.

Uniformity and wall lighting is important for comfort with EN12464 standards specifying 500 lux with ≥ 0.6 uniformity for the task, with 300 lux to the immediate surroundings and 200 lux just beyond that. The standards also specify 50 lux with 0.1 Uniformity on the walls and 30 lux with 0.1 Uniformity on the ceiling.



Face

Face is about enabling communication – whether that's face to face or face to camera. Soft lighting with good cylindrical illuminance and facial modelling is important for avoiding shadowing so we can read colleagues' body language correctly.

EN12464 standards specify 150 lux cylindrical illuminance (at head height, which may vary from 1.2m to 1.8m) and a modelling index between 0.3 and 0.6.

Lighting design at a glance

With these tables you can gain a quick view on how the IQ Wave can perform in your space. The key fundamentals in lighting design are demonstrated here: how much light is on your task, how the light interacts with the face, and how uniform the light is. With this guide you can start planning immediately your new project with IQ Wave.

Lux level:

The amount of light on the working plane EN12464 recommends 500lux for office and 300lux for classroom

Cylindrical illuminance:

The amount of lux on the face EN12464 recommends 150lux

Modelling ratio:

Ratio between lux on the desk lux on the face cylindrical illuminance/ task lux EN12464 Recommends between 0,3 and 0,6. (0 = 100% horizontal lux light 1=100% vertical lux)

Uniformity:

Evenness of the spread of light within the space EN12464 Recommend above 0,6

IQ Wave spacing guide

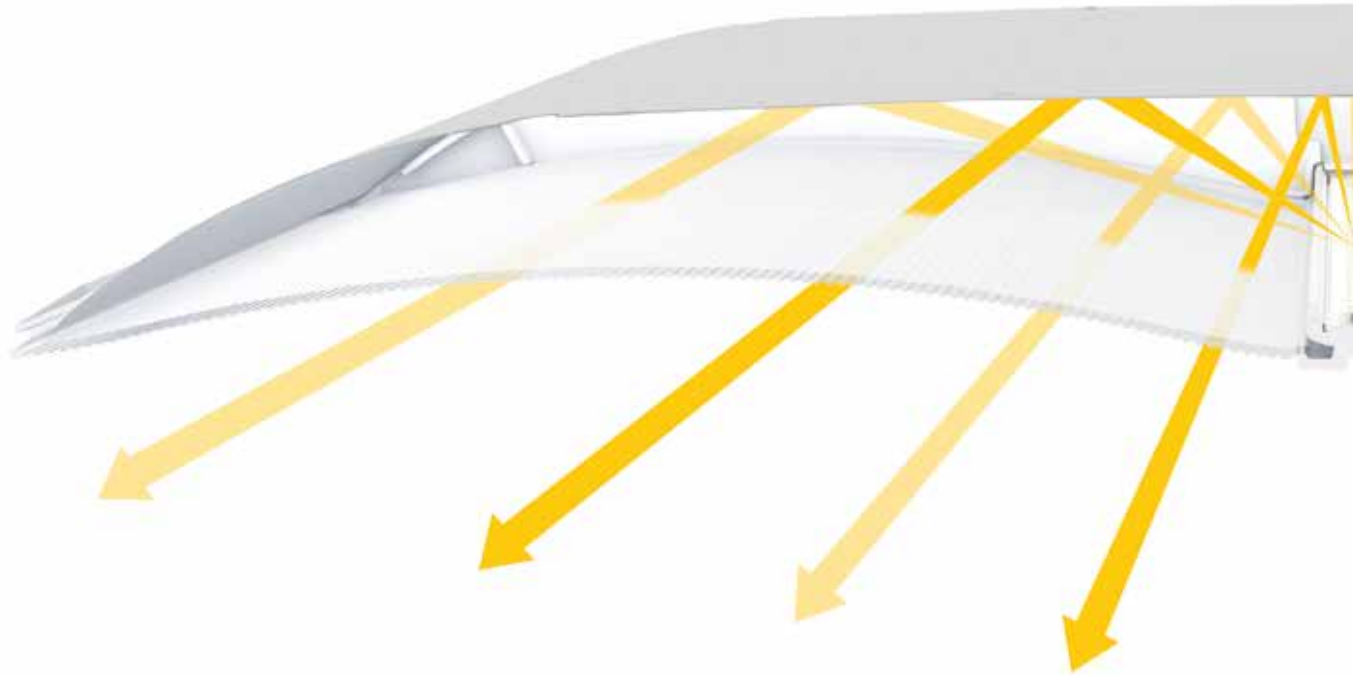
		Horizontal lux average at 0.8 metres	
Ceiling height	Spacings	3100lm	4100lm
2.4m	3.0 x 3.0	327	433
	3.0 x 2.4	404	534
	2.4 x 2.4	493	652
2.7m	3.0 x 3.0	319	422
	3.0 x 2.4	388	513
	2.4 x 2.4	473	625
3m	3.0 x 3.0	310	420
	3.0 x 2.4	376	498
	2.4 x 2.4	459	607

		3100lm		4100lm	
Ceiling height	Spacings	Cylindrical Illuminance 1.2m	Modelling Index	Cylindrical Illuminance 1.2m	Modelling Index
2.4m	3.0 x 3.0	142	0,43	187	0,43
	3.0 x 2.4	168	0,42	223	0,42
	2.4 x 2.4	200	0,41	265	0,41
2.7m	3.0 x 3.0	135	0,42	178	0,42
	3.0 x 2.4	164	0,42	217	0,42
	2.4 x 2.4	196	0,41	260	0,42
3m	3.0 x 3.0	129	0,42	170	0,41
	3.0 x 2.4	155	0,41	205	0,41
	2.4 x 2.4	187	0,41	247	0,41

		Uniformity	
Ceiling height	Spacings	3100lm	4100lm
2.4m	3.0 x 3.0	0.65	
	3.0 x 2.4	0.76	
	2.4 x 2.4	0.87	
2.7m	3.0 x 3.0	0.84	
	3.0 x 2.4	0.81	
	2.4 x 2.4	0.88	
3m	3.0 x 3.0	0.89	
	3.0 x 2.4	0.83	
	2.4 x 2.4	0.88	

Discover IQ Wave

New IQ Wave recessed LED luminaire from Thorn.
Managing lighting comfort in offices with intelligently designed optics, controls and installation.



Why we do it

- Comfort in an office is key

How we do it

- Light is controlled by a 'primary optic'
- Reflected off the back and controlled by the prisms and waves
- We have designed the optics to create the most comfortable light possible in a modern way.
- By inverting the source and controlling the light you hide the direct LED source and gain comfort with reduced glare

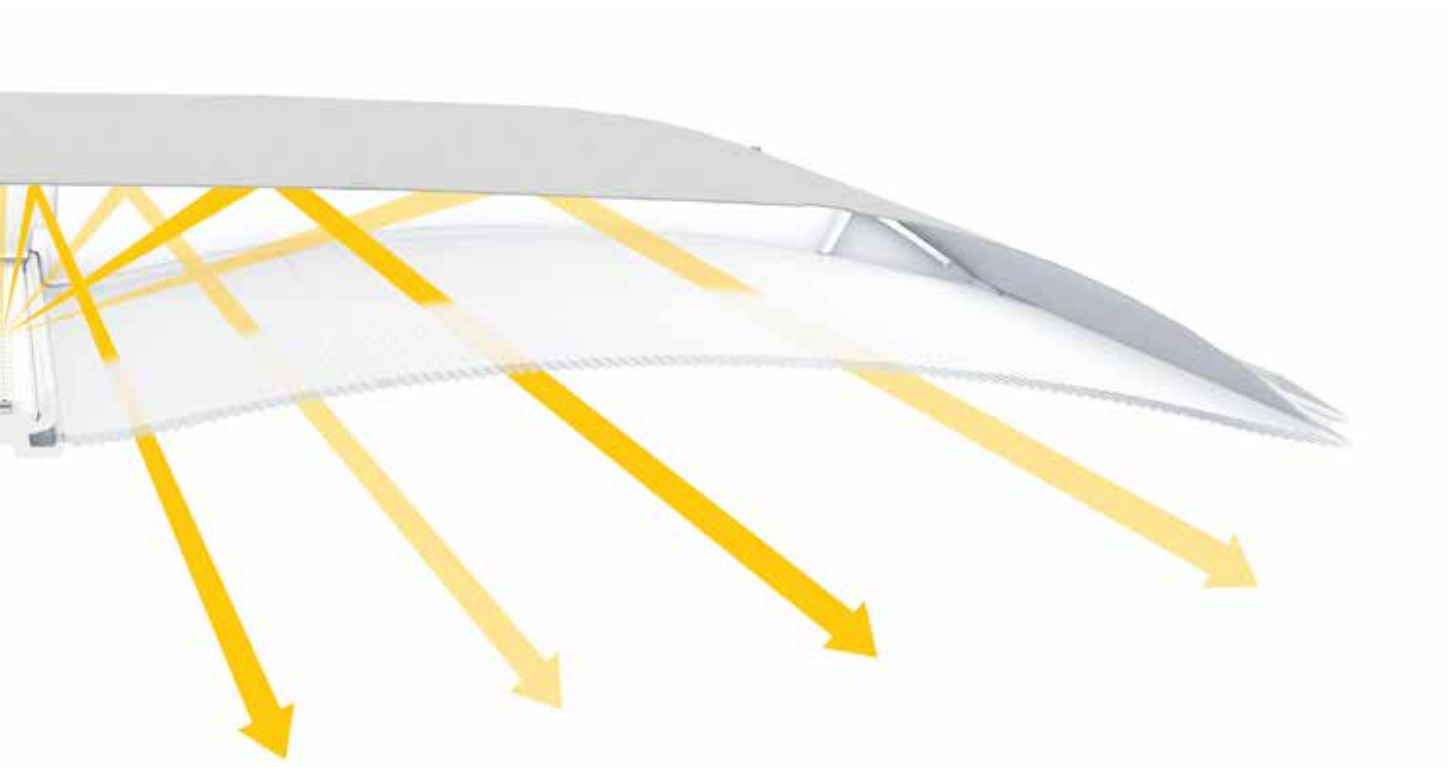
Results

- Glare control <19 UGR for most cases
- Glowing appearance
- Improves Task/Space/Face
- Results in great efficacy of 103lm/W

IQ Wave – Performance over and above EN12464 standards requirements

IQ Wave provides a satisfying and productive working environment, performing over and above EN12464 standards requirements by understanding how luminaire design impacts human comfort.

	EN12464	IQ Wave
Task Uniformity	>0.6	0.65 to 0.89
Modelling index	Between 0.3 and 0.6	0.41 to 0.43
Cylindrical illuminance	150 lux	150 lux
UGR	<19	<19
Glare	<3000cd/m ² at 65°	<3000cd/m ² at 65°



Unique MV-Tech light optic

Designed by Thorn's expert optical team IQ Wave features a unique MV-Tech light optic. Direct/indirect light distribution illuminates the task, space and face with uniform lighting to create a comfortable, communicative working environment. This ensures a homogeneous comfortable lit appearance with no LED hot spots and minimal light loss for high efficiency (103Llm/W).

Excellent light control allows greater spacing and a higher uniformity (see spacing chart, page 5).

The M refers to the shape of the light, dispersing from the central optic bouncing off the back and through the diffuser to create great task lighting. The V is the light which has been widely dispersed outwards from the centre to create a soft lit appearance and great face and space lighting.

FACE + SPACE



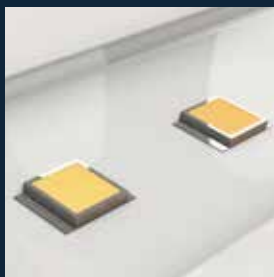
Research shows

Glare from multiple, small, intense light sources is worse than the Unified Glare Rating (UGR) predicts. This makes LED intensity, the spacing between LEDs and the ability to view the LED directly all important considerations. Softer light sources and uniform luminaires that blend light to the background are more comfortable.¹

¹ A Study on the Estimation of Discomfort Glare for LED Luminaires Lee, C.-M., Kim, H., Choi, D.-S. 2007

Intelligent design, impressive features

Intelligent design is the foundation that makes IQ Wave the perfect choice for high quality, comfortable office lighting.



LED

Manufactured by our sister company Tridonic, IQ Wave's LED PCB is a custom board made specifically for this luminaire. We have perfectly balanced the number of LEDs to ensure cost effective design, efficacy and pixelation avoidance.



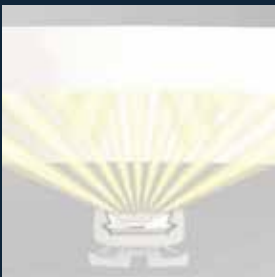
Primary optic

IQ Wave's primary optic turns the distribution of the board from traditional direct distribution into a more wide open distribution. This ensures that one source can fill the full light chamber uniformly.



Heat sink

IQ Wave's heat sink performs three key functions: to disperse heat away from the board; to contribute to the overall aspect of the luminaire with a sleek design and thirdly, it prevents you from viewing the board directly, thus preventing glare.



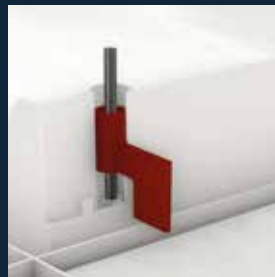
Highly reflective back

IQ Wave's back panel is coated with a highly reflective paint which reflects and disperses 90% of light. This ensures no LED hot spots are visible and light loss is just 10% for comfort and efficiency.



Diffuser

IQ Wave's diffuser controls light with prisms to achieve the required UGR 19 in all room sizes. The end optic is made of clear TPa polycarbonate to ensure fire retardance and very little light loss.



Red flag pull up kit

Thorn's newly developed red flag pull up kit ensures there is no need to touch or remove the optics. You can insert the flags into the corners, push up the product to the ceiling, turn out the flags, let the product hang and finally level the product with a hand drill to ensure a tight fix to the plasterboard or concealed grid ceiling.



Gear tray

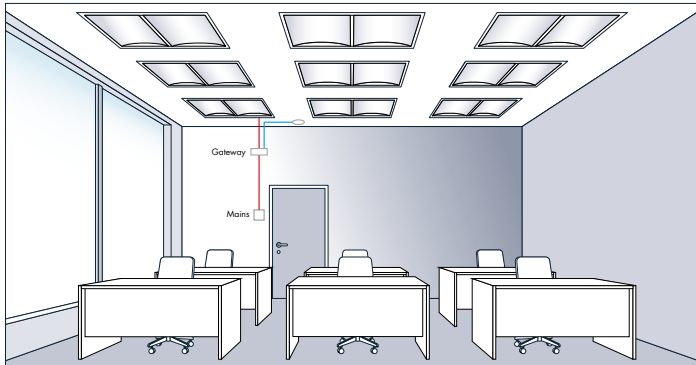
We wanted one easy access point to all the intelligence and electronics in the luminaire. IQ Wave's gear tray has an easy push-fit terminal block with dual entry and exit points for loop in loop out installation. You can also gain access to the integrated sensors for ease of commissioning.

Intelligent lighting controls

As no two spaces are the same, IQ Wave offers controls which adapt to your needs.

IQ Wave offers three lighting control solutions:

Refurbishment dimming solution



What do you need?

IQ Wave R2M + Refurbishment kit

Benefits?

- Dimming with no additional rewiring

Features:

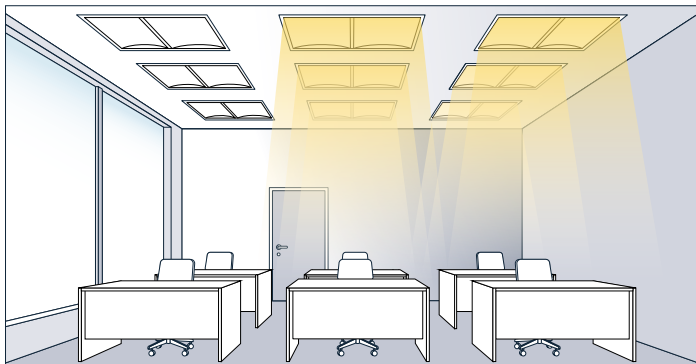
- Dual sensor delivers presence/absence detection and active daylight dimming
- 10 luminaires per gateway
- Control via remote or sensor

Energy saving potential

Daylight dimming: 70%

Presence/absence detection: 40%

Active daylight dimming



What do you need?

IQ Wave HFSX with integrated dual sensor (HFSX, see configuration guide page 15)

Benefits?

- Adjust light level according to the amount of daylight in the workspace to increase energy savings

Features:

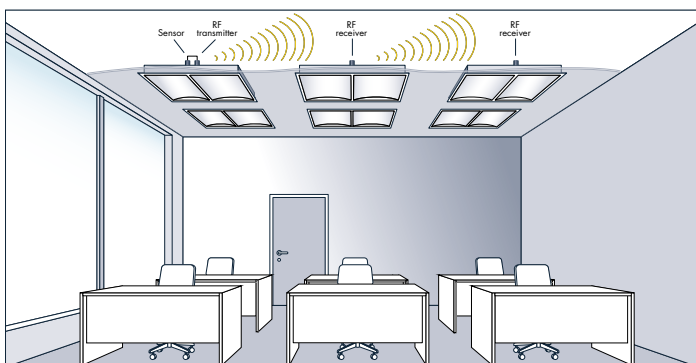
- Active daylight dimming and presence/absence detection via integrated sensor
- 5 luminaires per group
- Control via remote

Energy saving potential

Daylight dimming: 70%

Presence/absence detection: 40%

Wireless communication



What do you need?

IQ Wave MWS RF as master luminaire, IQ Wave RF as slave luminaire (MWS RF sensor + transmitter, RF transmitter see configuration guide page 15)

Benefits?

- Flexibility in zone creation
- Easy commissioning with dip switch

Features:

- Presence/absence detection
- Up to 32 groups
- 99 products per master

Energy saving potential

Presence/absence detection: 40%

Lighting zones: 36%



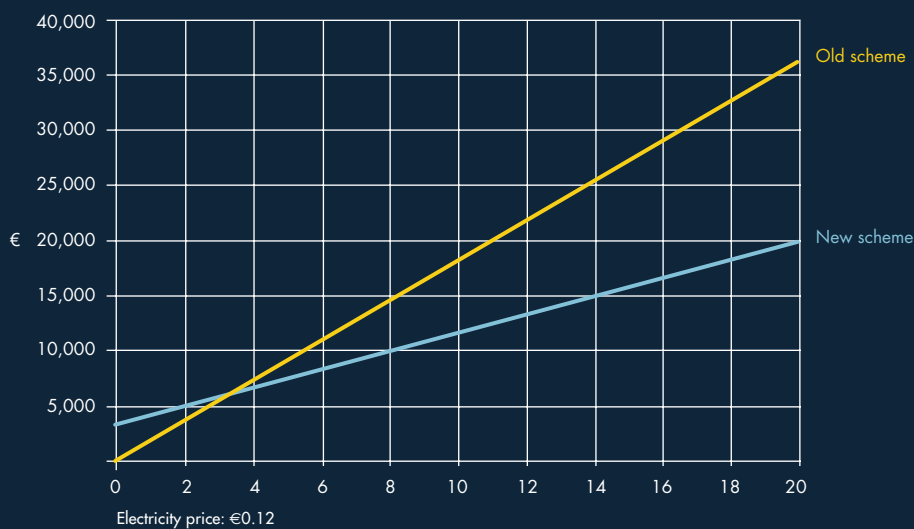
Energy saving opportunities

IQ Wave offers the perfect blend of efficacy, cost efficiency and pixelation avoidance.

Using the optimum number of LEDs, IQ Wave offers the perfect blend of efficacy, cost efficiency and pixelation avoidance. High efficacy (>103lm/W) achieves significant energy savings in comparison to traditional light sources.

Reduce energy costs by 46% with IQ Wave.

Energy Efficiency – Course of overall costs of solution over lifetime:



Scheme details:

13.9x13.7m room, 3m ceiling height, 70/50/20 reflectances designed to meet 300 lux. Old scheme used 25 fittings, 4x18W HF Category 2 louvres replaced by IQ Wave.

Investment costs vs. running costs of solution (absolute)

Old version



IQ Wave



9% 45% 46%

- total investment cost
- total running cost over lifetime
- saving

Installation

IQ Wave's intelligent installation features help reduce installation time and the associated costs.

IQ Wave's red flag pull up kit provides a quick 4-step installation process with no need to remove the optics. As well as saving time and allowing a more secure fix to the ceiling, the kit eliminates the risks of optical damage and residual dirt or fingerprints.

Easy to commission

With one easy access point to all the intelligence and electronics, IQ Wave is easy to commission. For ease and speed of installation the gear tray also features a push fit terminal block with dual entry and exit points for loop in loop out installation.

Red flag pull up kit



Step 1
The kit comes with four red flags, four screws and four spare covering tabs for the corners. Insert the red flags as shown above.

Step 2
Cut out 580mm square for plasterboard installation. Push the luminaire up to the concealed grid or plasterboard with all of the flags closed.



Step 3
While holding the luminaire, simply turn the flags out and let the luminaire hang on the four points. Level the product with a screwdriver to ensure a tight fix.

Step 4
Replace covering tabs.

IQ Wave is suitable for:

Pull-up concealed grid / Plasterboard ceilings / Lay in

Product specification

Our next generation office luminaire features intelligent innovation in four key areas: design, optics, control and installation.

Design

Simple and flowing lines create a modern but simplistic aesthetic perfect for an elegant office interior.

Optics

Innovative MV tech optic designed by our expert optical team offers excellent uniformity and glare control, as well as comfortable light for illuminance on faces and walls to encourage a comfortable, communicative working environment.

Controls

Integrated sensors allow you to create flexible controls systems suited to your needs. We have introduced a wireless RF solution for easy retro fit with no rewiring. Also available are integrated PIR and Microwave sensors.

Installation

With our new red flag design you can easily access the pull up set from below the ceiling without the need to remove the optics from the product, allowing for a more secure fixing to the ceiling.

Application

Education and office spaces.

Standards



Light source information

Lifetime 50 000 hours L90
3100Lm and 4100Lm
Up to 103lm/W
Colour temperature 3000K/4000K/6500K
CRI 80
MacAdams 3 shift over life 2
Photobiological risk group 0

Materials/Finish

Frame and end caps: polycarbonate
Diffuser: polycarbonate, aluminium heat sink
Body: highly reflective steel coffer
Gear tray: pre-coated white steel

Installation/Mounting

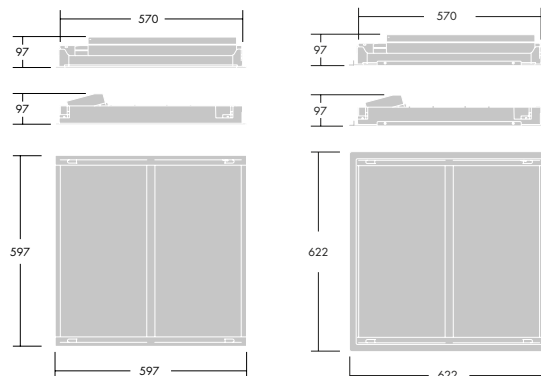
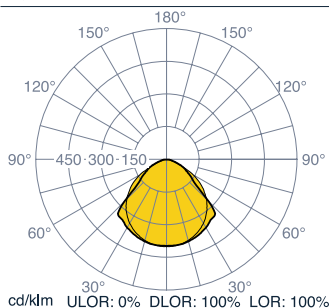
Suitable for lay in, with accessory suitable for pull up into concealed grid and plasterboard ceilings.

Specification

To specify state:

A lightweight recessed luminaire for exposed T plasterboard and concealed grid systems with MV tech optic. LED indirect light source. 4000K/3000K/6500K colour temperature, CRI>80 and a lifetime of 50 000 hours @ L90 Ta 25°C, UGR <19 for most cases. With control systems, PIR, MWS, RF. As Thorn IQ Wave.

IQ Wave



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5 Year Warranty

As a globally leading luminaire manufacturer, Thorn Lighting provides a five-year warranty for its complete product range within all European Countries.

www.thornlighting.com/warranty

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